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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,522	11/05/2003	Tommy Hansen	H0610.0355/P355	9436

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DICKSTEIN SHAPIRO LLP
1825 EYE STREET NW
Washington, DC 20006-5403

EXAMINER	
HYUN, PAUL SANG HWA	

ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/700,522	HANSEN ET AL.	
	Examiner	Art Unit	
	PAUL S. HYUN	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-5 and 7-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-5 and 7-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1, 3-5 and 7-10 remain pending.

The rejection of claims 1, 3-5 and 10 under 35 U.S.C. section 112 cited in the previous Office action has been withdrawn in light of Applicant's argument. The Examiner agrees with Applicant that the originally filed application does provide sufficient support for the amendment filed on April 9, 2008.

Despite Applicant's arguments, the art rejections are maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1 and 7-9** are rejected 35 U.S.C. 103(a) as being unpatentable over Öttle (US 4,160,010) in view of Fujitani et al. (US 4,109,461) and Ravault (US 3,895,917).

Öttle discloses a reactor for conducting chemical reactions (see Figs. 1 and 2). The reactor comprises a reactor shell 12 comprising an inlet and an outlet, a catalyst bed 22, and an impermeable basket in the form of metallic foil 30 that surrounds the sidewalls of the catalyst bed and flanges 34 that extend in a direction transverse to the inlet to support the catalyst bed. The foil 30 prevents the sample gas from circumventing the catalyst bed (see claim 1). The reactor disclosed by Öttle differs from the claimed invention in that Öttle does not explicitly disclose that the catalyst bed is designed for

partial oxidation of hydrocarbons. Consequently, Öttle does not disclose the method step of partially oxidizing hydrocarbons. Lastly, Öttle does not disclose a ceramic coating.

With respect to the partial oxidation of hydrocarbons, Fujitani et al. disclose a reactor for partially oxidizing hydrocarbon products of an internal combustion engine to more environmentally friendly gases. The method comprises the step of feeding the hydrocarbons to a reactor comprising a catalyst (e.g. rhodium, nickel [see lines 2-3, col. 3]) and conducting a reaction in the temperature range between 800 to 1200 degrees Celsius (see Abstract). In light of the disclosure of Fujitani et al., it would have been obvious to one of ordinary skill in the art to substitute the catalyst bed disclosed by Öttle with the catalyst bed disclosed by Fujitani et al. so that the reactor can be used to partially oxidize hydrocarbons. It also would have been obvious to conduct partial oxidation of hydrocarbons using the modified reactor since the reactor is designed to conduct such reactions.

With respect to the ceramic coating, Ravault discloses a reactor comprising a catalyst bed wherein the outer walls of the bed are rendered impermeable by a ceramic glaze (see claim 2). In light of the disclosure of Ravault, it would have been obvious to one of ordinary skill in the art to provide a ceramic coating to the walls of the foil of the modified Öttle reactor to reinforce the impermeability and the strength of the metallic foil.

Claims **3-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Öttle in view of Fujitani et al. and Ravault as applied to claims 1 and 7-9, and further in view of Mentschel (US 4,018,573).

None of Öttle, Fujitani et al. and Ravault disclose a heating means to maintain a high reaction temperature inside the reactor.

Mentschel discloses a reactor comprising an electric heater for controlling the temperature of the reaction within the reactor (see lines 20-35, col. 7). In light of the disclosure of Mentschel, it would have been obvious to one of ordinary skill in the art to provide a heater around the foil and ceramic coating of the modified Öttle reactor so that a desired reaction temperature can be maintained within the modified reactor.

Claim **10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Öttle in view of Fujitani et al. and Ravault as applied to claims 1 and 7, and further in view of Werges (US 3,929,421).

None of Öttle, Fujitani et al. and Ravault disclose a grid to support the catalyst bed. However, Öttle does disclose the use of flanges to support the catalyst bed.

Werges discloses a reactor comprising a bed of catalyst axially supported by a grid 63 (see Fig. 7). In light of the disclosure of Werges, it would have been obvious to one of ordinary skill in the art to substitute the flanges of the modified Öttle reactor with a grid to provide the modified reactor with a means that supports the entire catalyst bed.

Response to Arguments

Applicant's arguments with respect to the rejection of claims 1 and 7-9 have been fully considered but they are not persuasive.

Applicant argues that the reactor disclosed by Öttle will not be able to support the catalyst disclosed by Fujitani et al. if it is oriented vertically because the catalyst disclosed by Fujitani et al. is in the form of particles and thus would fall out of the reactor. This argument is not persuasive because Figure 2 of Fujitani et al. shows that the catalyst bed can be oriented vertically. The figure suggests that the catalyst does not consist of loose particles. Moreover, Fujitani et al. refers to catalyst 34 as "a catalyst" or "catalyst layer", suggesting that the catalyst consists of a single mass of catalyst. Thus, the Examiner maintains the position that the flanges disclosed by Öttle are capable of supporting the catalyst disclosed by Fujitani et al.

Applicant argues that the pressure inside the catalyst bed disclosed by Öttle is not approximately same as the pressure outside of the catalyst bed as recited in the claim, and thus the claimed invention is patentable over the cited prior art. This argument is not persuasive because the limitation "wherein the reacted gas leaves the basket inside the reactor shell, ensuring same pressure inside and outside of the basket" does not sufficiently distinguish the structure of the claimed invention from the reactor disclosed by Öttle. The limitation does limit the structure of claimed invention in that the reactor must enable the gas to exit the basket inside the reactor shell. However, this structural limitation is met by the reactor of Öttle. As shown in Figure 4 of Öttle, basket 30" terminates at ring 36", which is still within the boundaries of the reactor shell.

With respect to the limitation directed towards equal pressure, according to the claim language, equal pressure is the inherent outcome of the gas leaving the basket inside the reactor shell. In other words, if the reacted gas leaves the basket inside the reactor shell, then according to the claim language, equal pressure inside and outside is achieved. Because the reacted gas passing through the reactor disclosed by Öttle exits the basket inside the reactor shell, the subsequent limitation directed towards pressure is presumed to be met. Applicant's argument that the limitation in question sufficiently distinguishes the claimed invention because the claimed invention can maintain equal pressure at 800 degrees Celsius is not persuasive because the distinction is only apparent under specific set of circumstances.

Applicant also argues that the claimed invention is patentably distinct because the claimed ceramic coating serves as insulation, whereas the coating disclosed by Ravault serves to render the walls of the catalyst impermeable. This argument is not persuasive because the fact that Applicant has recognized another advantage of the ceramic coating which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Applicant's argument with respect to the rejection of claims 3-5 has been fully considered but it is not persuasive.

Applicant argues that the claimed invention is patentably distinct from the modified Öttle reactor because the claimed heater is surrounded by the reacting gas during operation. This argument is not persuasive because features upon which

Applicant relies are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this instance, the claims are silently with respect to whether the heater is surrounded by reacting gas. Claim 3 merely recites that the heater is installed on the outer surface of the metallic basket. Based on the disclosure of Mentschel, there is sufficient motivation to provide an electric heater on the outer surface of the basket disclosed by Öttle.

Applicant's argument with respect to the rejection of claim 10 is moot in light of the response above.

For the foregoing reasons, the rejections are maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL S. HYUN whose telephone number is (571)272-8559. The examiner can normally be reached on Monday-Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Paul S Hyun/
Examiner, Art Unit 1797

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797